Introduction

A 5-year-old male with metastatic alveolar rhabdomyosarcoma (ARMS) presented to our institution and suffered precipitous cardiopulmonary collapse with severe tumor lysis syndrome (TLS) 48 hours after initiation of chemotherapy.

Hypoxemic respiratory arrest prompted prolonged resuscitation efforts and ultimately extracorporeal membrane oxygenation (ECMO) was initiated.

The use of ECMO in pediatric oncology patients is controversial as prognosis, morbidity, and resource limitations must be considered.

Case

• At initial diagnosis, diffuse bone marrow involvement (below, panels A-C) and a FDG avid soft tissue lesion on PET scan was noted (Right).
• Two days after initiation of standard chemotherapy with vincristine and etoposide patient presented in respiratory distress. Chest X-ray demonstrated R:L opacification of the lung fields (Right).
• Continued, rapid deterioration lead to intubation and placement of bilateral chest tubes which evacuated copious serous fluids.
• Hypoxemic respiratory arrest during suctioning prompted prolonged resuscitation.

ECMO for Pediatric Oncology Patients

- Offering ECMO to patients with cancer is controversial and there are no standardized criteria on appropriate use.
- Multiple considerations:
  - Disease prognosis
  - Reversibility of acute illness
  - Morbidity associated with treatments
  - Appropriate use of resources
- Reported mortality for pediatric patients receiving ECMO lower (27-43%)\(^1\)\(^2\) than in adults (54%).
- Higher mortality and morbidity in oncolgic/immunosuppressed patients (65-70%)\(^3\).
- Despite concerns for short and long term mortality/complications, 95% of centers indicated they would consider use of ECMO in pediatric malignancy\(^3\).

• There are limited guidelines regarding ECMO management in the OR setting especially in the setting of dynamic pulmonary and cardiovascular changes.
• Indications for ECMO use will likely continue to expand and disease states are managed more effectively.
• Anesthesiologist must be trained in ECMO specific considerations.
• In our case, the 5-year survival of metastatic ARMS is approximately 20%, but approximately 65% of such patients are alive at two years with modern treatment.
• Despite concerns over prognosis single organ involvement and the opportunity for life prolongation and/or disease survival prompted use of all available resources including ECMO.

References